BEFORE THE

Federal Communications Commission

WASHINGTON, D. C.

In the Matter of	)	
	)	
Implementation of Section 17	)	
of the Cable Television	)	ET Docket No. 93-7
Consumer Protection and	)	
Competition Act of 1992	)	
	)	
Compatibility Between	)	
Cable Systems and Consumer	)	
Electronics Equipment	)	

COMMENTS OF TELE-COMMUNICATIONS, INC.

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SUMMARY

The complex compatibility problem addressed in this proceeding is due in large part to the unsynchronized technology cycles of the cable and consumer electronics industries. While cable systems upgrade channel capacity every six to seven years, consumer electronics products are designed to have life cycles upwards of 15 years. As a result of this technological disjunction, cable operators have been forced to install set-top converters in their subscribers' homes either to tune additional cable channels or to overcome other technical deficiencies of the subscriber's TV or VCR. More recently, cable operators have deployed set-top descramblers to protect the security of programming.

While set-top converters/descramblers thus perform several essential functions, they also have certain disabling side effects. Most notably, because a set-top converter/descrambler receives incoming cable signals before the TV and VCR and puts out only one channel at a time to the TV or VCR, it inadvertently hinders certain TV/VCR features that require simultaneous access to two channels.

In passing Section 17 of the 1992 Cable Act, Congress sought to bring the cable and consumer electronics industries together in a cooperative effort to foster compatibility and thereby improve consumer welfare. While technology can solve many compatibility issues, the goal must be to achieve compatibility in a way that does not impose excessive costs on the industries

involved and ultimately consumers. Thus, in promulgating rules under Section 17, the Commission essentially faces a continuum. At one end, the Commission could achieve compatibility by requiring manufacturers to build sufficient flexibility into TVs and VCRs to accommodate advancements in cable technology. In this scenario, manufacturers would bear the costs of compatibility. At the other end of the continuum, the Commission could require cable operators to build or reconfigure their systems to accommodate all current and future TV and VCR features. In this scenario, cable operators would bear the cost of compatibility.

However, neither of these solutions seems optimal. Rather, a more appropriate solution is a middle ground where both equipment manufacturers and cable operators share the responsibility of achieving compatibility. Such a cooperative approach is more likely to facilitate compatibility in an efficient manner that maximizes consumer benefits. TCI believes the Commission can facilitate this result by adopting certain short and long-term proposals described herein.

In the short term, due to the large installed base of cable security systems, consumer electronics receivers, and set-top boxes, the options available for achieving compatibility are somewhat limited. TCI recommends a short-term approach which:

- promotes the use of existing supplemental devices through which nearly all the functionality specified by the 1992 Cable Act can be achieved at relatively little cost to cable subscribers who desire such functions.

- encourages increased efforts to educate consumers regarding the availability and use of these existing short-term solutions.

- emphasizes the need for more complete consumer notification, particularly at the point of sale of TVs and VCRs.

In the longer term, the Commission should require all new TVs and VCRs to incorporate: 1) a standard interface port (called "EIA/ANSI 563") into which the subscriber would plug a descrambling device provided by the cable operator; and 2) a modular tuner. This would remove the need for set top converters and descramblers. Thus, scrambling would be transparent and TV/VCR features would remain unaffected. The EIA/ANSI 563 multiport provides very high compatibility at a very low cost -- approximately $5 per TV set or VCR.

The EIA/ANSI 563 multiport has the added advantage of enhancing compatibility between home electronics equipment and numerous distribution media, not just cable. Technology is in a dynamic phase where existing distribution networks are evolving and new networks are emerging. This growth will naturally create compatibility issues. If the Commission adopts a narrow approach which addresses only the cable-home electronics interface, it likely will confront compatibility problems over and over again with other distribution technologies. Rather, the Commission should adopt a forward-looking approach which recognizes the need to foster compatibility across all media. TCI believes the EIA/ANSI 563 multiport is such an approach.

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COMMENTS OF TELE-COMMUNICATIONS, INC.

Tele-Communications, Inc. ("TCI") hereby files its Comments in the above-captioned proceeding.[1] TCI, through its operating subsidiaries, is a multiple systems operator providing cable service in 49 states to approximately nine million subscribers. TCI is thus an interested party to this proceeding.

I. INTRODUCTION

The compatibility problem between the cable and consumer electronics industries stems fundamentally from the fact that the technology cycles of the two industries are unsynchronized. While cable operators expand system capacity, on average, every six to seven years, consumer electronics devices -- especially TVs -- have life spans of upwards of 15 years. This

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[1] Notice of Inquiry in ET Docket No. 93-7, FCC 93-30 (released January 29, 1993) ("Notice").

technological disjunction has led to the duplication of efforts, costs, and functionality which is at the heart of the compatibility problem. A quick review of the components comprising a typical video entertainment system points up the problem of duplication:

TV	=	Tuner + Remote + Power Supply + Power Cord + Picture Tube
VCR	=	Tuner + Remote + Power Supply + Power Cord + Recording Head
CABLE SET-TOP CONVERTER/ DESCRAMBLER[2]	=	Tuner + Remote + Power Supply + Power Cord + Descrambler

The set-top converter was invented to overcome technical deficiencies in consumer electronics tuners, such as Direct Pick Up ("DPU") interference, non-linear performance, image response, and signal back feed. In addition, because of the lack of synchronization described above, many TVs and VCRs will not tune all cable channels. Thus, set-top converters were also necessary to tune additional cable channels. Finally, these set-top boxes were equipped with conditional access control capabilities, including addressability and descrambling (set-top units performing these functions are called "descramblers") to secure highly valuable premium and pay-per-view video signals.

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[2] A "converter" is a device that provides advanced tuning functionality. A "descrambler" is a device that decodes video signals that have been scrambled by the cable operator. The confusion stems primarily from the fact that many "set-top descramblers" installed by cable operators perform <u>both</u> the descrambling <u>and</u> tuning functions. Conversely, a "set-top converter" performs only the tuning function.

While set-top converters/descramblers thus are necessary to compensate for the technical shortcomings of TVs and VCRs and to protect video signals, they also have certain disabling side effects. Most advanced TV and VCR features take place in the tuners and remote control units. Set-top converters/descramblers receive the incoming cable signal before the TV/VCR and put out only one channel at a time. Thus, a number of advanced TV and VCR features that require simultaneous access to two channels, such as those identified in Section 17 of the 1992 Cable Act, are frustrated.

In passing Section 17 of the 1992 Cable Act, Congress sought to bring the cable and consumer electronics industries together in a cooperative effort to foster compatibility and thereby improve consumer welfare. While technology can solve many compatibility issues, the goal must be to achieve compatibility in a way that does not impose excessive costs on the industries involved and ultimately consumers. Thus, in promulgating rules under Section 17, the Commission essentially faces a continuum. At one end, the Commission could accomplish compatibility by requiring manufacturers to build sufficient flexibility into TVs and VCRs to accommodate advancements in cable technology. In this scenario, manufacturers would bear the costs of compatibility. At the other end, the Commission could require cable operators to build or reconfigure their systems to accommodate all current and future TV and VCR features. In this scenario, cable operators would bear the cost of compatibility.

However, neither of these solutions seem optimal. A more appropriate solution is a middle ground where both equipment manufacturers and cable operators share the responsibility of achieving compatibility. TCI believes the Commission can facilitate this result by adopting certain short and long-term proposals described herein.

In the short term, where there is a large installed base of both cable security systems and home equipment, the options available for achieving compatibility are somewhat limited. This implies that the costs of compatibility will be higher and the degree of functionality achieved will be lower. Achieving backward compatibility between existing receivers and cable

that operate successfully by supplying "translator" or "gateway" products. These products provide for compatibility between otherwise incompatible technologies.

In the long-term, the Commission should require manufacturers to incorporate into all new TVs and VCRs: 1) a standard decoder interface port (called "EIA/ANSI 563" or "multiport"); and 2) a modular tuner. Cable operators would provide their subscribers with a set-back descrambler which would plug directly into this EIA/ANSI 563 port, much like a modem plugs into the serial port on a personal computer. A TV or VCR equipped with an EIA/ANSI 563 interface port and the proper set-back descrambler would afford a cable subscriber maximum flexibility in using the features of his consumer electronics hardware, because it would no longer be necessary to have a set-top converter/descrambler "ahead" of the TV's or VCR's tuner that would frustrate these features. The modular tuner would allow the tuning function in a TV or VCR to be upgraded as channel capacity is increased, thus removing the need for a converter.

The EIA/ANSI 563 interface has two added benefits. First, it facilitates compatibility not only for cable, but for other distribution technologies as well. As the Commission knows, technology is dynamic. Existing distribution technologies are growing and new ones are emerging. The EIA/ANSI 563 approach is capable of fostering compatibility across many of these technologies. Thus, neither the Commission nor consumers need face compatibility problems as each new technology emerges.

Second, because the EIA/ANSI 563 interface is a modular approach, it would provide compatibility in a digital world when digital TVs and VCRs are introduced.[3]

Finally, TCI's long-term approach recognizes that four functions interact to provide cable television service to consumers: 1) tuning; 2) security; 3) service level control; and 4) audio/video display and recording. As mentioned above, the compatibility problem has arisen largely because cable operators have been forced to perform the tuning function to compensate for inadequate TVs and VCRs. To rectify this situation, and provide a cost-effective, long-term solution to compatibility problems, TCI proposes a compromise, described more fully below, in which cable operators perform functions 2 and 3 and manufacturers produce TV sets which perform functions 1 and 4.

II. IMPROVING COMPATIBILITY WITH TVS AND VCRS

A. Proposed Short Term Solutions

Short term solutions to the compatibility problem are needed for the millions of subscribers whose cable setups currently utilize set-top converters/descramblers. Even if the Commission adopts TCI's long-term recommendation to equip all new TVs and VCRs with EIA/ANSI 563 interface ports and modular tuners, there will still be a large population of existing TVs and VCRs that will remain in service for more than a decade.

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[3] For a fuller discussion of the impact of digital technology, see infra Section IV.

However, there are options currently available and others continue to be developed that allow subscribers in these situations to enjoy nearly all the features of their TVs/VCRs. Below, TCI provides several concrete examples of options available to subscribers with set-top converters/descramblers who wish to enjoy those TV and VCR functions specifically mentioned in Section 17 of the 1992 Cable Act, namely the ability to: 1) watch a program on one channel while simultaneously using a VCR to tape a program on another channel; 2) use a VCR to tape two consecutive programs appearing on different channels; and 3) use advanced television picture generation and display features, such as picture-in-picture.[4]

1. Watching One Program While Taping Another

As discussed, because set-top converters/descramblers tune and/or descramble authorized signals and place them on a single output channel, certain consumer electronics features which require simultaneous access to two channels are impaired, such as the ability to watch one program while taping another. Thus, if a subscriber wishes to watch one scrambled channel while recording another scrambled channel, two descramblers are required. However, where one of the desired channels is not scrambled, a subscriber with one set-top descrambler, through the use of readily available supplemental equipment, has several options, including the ability to: 1) watch a scrambled channel

taping a non-scrambled channel; and 3) watch a non-scrambled channel while taping a scrambled one.[5]

Two simple forms of such supplementary equipment which the subscriber could rent or purchase to achieve short-term compatibility are a decoder "bypass" switch and a specially designed set-top interface box.[6] The decoder bypass switch, when activated, would redirect all non-scrambled signals around the converter/descrambler and directly into the TV/VCR tuner. This device allows the user to regain full functionality of his TV or VCR. When the subscriber wishes to watch a scrambled premium or pay-per-view channel, the bypass switch is deactivated and the descrambler's output channel is tuned by the TV or VCR. This signal bypass approach would solve most of the compatibility issues raised by the 1992 Cable Act and would cost around $10 per converter/descrambler.

Another short-term solution is provided by a specially designed set-top interface box which is currently available from third parties. This interface box sits along side the converter/descrambler and contains the sophisticated circuitry

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[5] A large number of simultaneous taping scenarios fall into these categories. In nearly all cable systems, the broadcast channels and certain governmental access and local access channels are not scrambled. Thus, in nearly all cases, the cable subscriber has more choices for simultaneously recording one program while watching another program than the non-cable viewer who has only broadcast service.

[6] TCI also notes that many types of supplementary hardware that a subscriber can use to achieve short-term compatibility are generally available from cable operators at no charge, such as splitters and A/B switches.

and A/B switches necessary to allow a cable subscriber with a set-top converter/descrambler to regain the functionality of his TV and VCR. The advantage of this interface box is that, while technically sophisticated, it is very simple to use. The top of the box is labelled according to the various functions a subscriber may wish to perform. A simple depiction of this custom box is presented in Attachment A.

2. Consecutive Taping From Different Channels

Similarly, there are available and straightforward solutions to enable a subscriber to use a VCR to tape two consecutive programs appearing on different channels. For example, most popular brands of set-top descramblers offer models with built-in clocks and timers which allow them to be programmed to change channels. The same skills necessary to program a VCR can be used to program these set-top boxes. Moreover, a number of "universal" remote controls which are readily available at reasonable cost from third party vendors have timers built into them to achieve similar functionality.

Another alternative is provided by the commercially successful "VCR Plus" product. Introduced about two years ago, VCR Plus is a programming device designed to make it easier for consumers to set their VCRs. Instead of using the complicated methods described in the manuals that accompany VCRs, a VCR Plus owner can simply punch a special code into the VCR Plus and the VCR will take its messages from that device. These special codes for TV and cable programs appear in most daily and Sunday

newspapers and in TV Guide. In addition, the VCR Plus is capable of controlling cable set-top boxes. It simply emits IR signals at the correct time to change set-top channels and turn on the VCR.

Several VCR manufacturers have recently manufactured VCRs with VCR Plus technology built into the unit. However, unlike the VCR Plus hand-held models, most of these newer, built-in models do not emit the codes necessary to change the channels on the cable box.[7] The irony here is that often the cable operator is the one blamed for the problem even though the operator had nothing to do with the VCR manufacturer's choice.

3. Advanced Picture Generation and Display Features

The advanced picture generation and display features specified by Section 17(A)(c)(1)(A)(iii), most notably picture-in-picture ("PIP"), can also be achieved with available solutions.

The great majority of TV receivers with PIP do not come with two tuners. The second picture comes from base band video and audio inputs on the back of the TV set. These inputs are fed from either a camcorder or a VCR. This results in the need to use the VCR's remote control for the PIP display and the TV's remote control for the normal display. Since many cable set-top units are available with baseband outputs which can be used for

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[7] See Nolan, "VCR Minus Cable," Cablevision, November 2, 1992, at 18.

the PIP input, in the case of a cable subscriber without a VCR the set-top unit serves as an enabling device to allow the subscriber to use the PIP feature for the first time.

In the most prevalent PIP configuration, a small picture is placed inside the larger picture. Sound comes only from the larger picture and a remote control button allows the exchange of the two pictures. In this PIP configuration, simultaneous access to two channels is required. Thus, if a viewer wishes both the main and PIP picture to come from scrambled signals, two descramblers are required. In this instance, the "two-descrambler" or "dual tuner/scrambler within one unit" solution described in #1 above provides an equally viable alternative.

4. Increased Consumer Notification and Education

In the end, achieving compatibility between the cable and consumer electronics industries is a complex problem with no easy solution. Perhaps, the best short-term approach is to educate consumers regarding the compatibility issues and raise awareness of the numerous choices available depending on the cable system's situation and the subscriber's needs. Toward this end, TCI will do its part to comply with the notification requirement of Section 17(A)(c)(2)(B)(i) and to continue consumer education to minimize confusion about the incompatibility between cable and consumer electronics equipment.

TCI, of course, is currently engaged in consumer education as part of its overall effort to maximize subscriber satisfaction. Cable installers are often called upon by the

subscriber to perform a wide array of tasks (from installing VCRs and programming remote controls to engaging in mini-tutorials on the use of a consumer's TV and VCR) simply because they are knowledgeable people who interact with the customer in the home. These services are provided at significant expense to the cable operator but at no additional charge to the consumer. TCI will continue to provide such value added services to its subscribers.[8]

However, notification of potential compatibility conflicts provided by the cable operator alone will not eliminate consumer frustration. It is essential that such notification also occur at the point of sale. Consumers should be informed whether or not the TV or VCR they are viewing at the point of sale is connected to a cable system. Consumers should also be told that some features of the TV or VCR may not work if connected to a cable system and encouraged to consult their local cable operator for further information. In addition, the Commission should consider requiring the attachment of a label to the boxes in which TVs and VCRs are marketed advising consumers at the point of purchase that some consumer electronics features may not be compatible with some of the services they may choose to purchase

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[8] In addition, it is reasonable to believe that eventually, if the market calls for it, an independent industry may spring up whose primary purpose will be to educate consumers and assist them in the implementation of compatibility solutions.

from cable operators. This information should be included in the owner's manual, as well.[9]

* * *

TCI recognizes that the solutions described above are not perfect. Nonetheless, nearly all the functionality specified by the 1992 Cable Act can be accommodated at relatively little cost to those subscribers who desire such functions. Compatibility is achievable between cable and consumer electronics equipment in ways that do not substantially interfere with the features of TVs and VCRs. Indeed, the NCTA Engineering Committee's Subcommittee on Consumer Interconnection has published a comprehensive guide entitled "Connecting Cable Systems to Subscribers' TVs and VCRs - Guidelines for the Cable Television Industry" which describes and fully illustrates 27 short-term solutions utilizing currently available equipment to achieve the various levels of compatibility identified in Section 17 of the 1992 Cable Act and beyond.

TCI's proposed short-term approach towards achieving compatibility between cable and consumer electronics equipment is consistent with the experience in many areas of the computer and

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[9] The Commission has imposed labelling requirements in similar circumstances. See, e.g., Amendment of Part 15 of the Commission's Rules to Implement the Provision's of the Television Decoder Circuitry Act of 1990, 6 F.C.C. 2419, 2433 (1991) ("We believe the consumer would be better informed in making a purchase if the box or other package in which the television receiver is marketed carried a statement in a prominent location, visible to the buyer before purchase, identifying which of these closed-caption features are supported and which are not. We also believe such information should be in the owner's manual."). See also 47 C.F.R. 15.119(m).

telecommunications industries. In those industries, the existence of multiple standards and multiple vendors engendered a vibrant market for "translators" and "gateways" -- supplemental devices that permit communications between otherwise incompatible components as a substitute for interface standards.[10] For example, an office whose computer network consists of IBM personal computers will incur additional costs for gateway products if it desires to increase the functionality of its network by incorporating inherently incompatible Apple Macintosh computers. In this case, the office makes a choice that it is unwilling to forego the additional functionality achieved by the inclusion of Macintosh computers in its network merely to avert the inconvenience and incremental expense of an intervening translator. Likewise, the television viewer can chose whether the additional entertainment value accrued via a subscription to cable justifies the purchase or rental of new or supplemental equipment to achieve the desired compatibility.

Some have argued that the existing short-term solutions described above do interfere with the functions of TVs and VCRs in that they make it more cumbersome for the subscriber to enjoy features which he has already paid for. The problem with this argument is it confuses notions of "compatibility" and "transparency." "Compatibility" means products work together;

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[10] See Stanley M. Besen and Garth Saloner, "The Economics of Telecommunications Standards," in Changing the Rules: Technological Change, International Competition, and Regulation in Communications 178, 191 (1989).

"transparency" signifies an added dimension of consumer ease of use. Section 17 of the Cable Act directs the Commission to find means of assuring compatibility, not transparency, between TVs, VCRs, and cable systems. Thus, the short-term solutions described above, while admittedly not perfect, do satisfy the statutory mandate by allowing otherwise conflicting components to work together to achieve a desired result.[11]

Full transparency between the cable and consumer electronics industries is unrealistic due to the lack of synchronization in the two industries' technology cycles. Moreover, the Commission must realize that attempting to force high levels of compatibility in the short term likely would impose very significant costs that ultimately would be borne by subscribers. Such an approach also could seriously degrade cable system security, an intolerable result that is entirely inconsistent with longstanding Congressional recognition of the need for cable operators to protect the security of programming.[12]

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[11] To a large extent, this tendency to confuse "compatibility" and "transparency" is due to Section 17's "findings" section which exaggerates the compatibility situation and overlooks solutions and partial solutions which are available. This section incorrectly implies that some functions are impossible when they are at worst inconvenient. See 1992 Cable Act § 17(A)(a)(1-3).

[12] The legislative history of the Cable Communications Policy Act of 1984 reflects Congress' concern about signal security: "The Committee believes that theft of cable service poses a major threat to the economic viability of cable operators and cable programmers, and creates unfair burdens on cable subscribers who are forced to subsidize the benefits that other individuals are getting by receiving cable service without paying for it." H.R. Rep. No. 934, 98th Cong., 2d Sess. 83 (1984).
(continued...)

B. Proposed Long Term Solution -- The Commission Should Require All New TVs and VCRs to Incorporate a Set-Back Descrambler Interface and a Modular Tuner

TCI's long-term approach requires that the Commission recognize that four unique functions interact to provide cable television service to consumers: 1) tuning; 2) security; 3) service level control; and 4) audio/video display and recording. As noted, the compatibility problem has arisen largely because of the unsynchronized technology cycles of the cable and consumer electronics industries which has required cable operators to duplicate the tuning function in their set-top converters/descramblers to compensate for the inadequate tuners in TVs and VCRs. To rectify this situation, the Commission should delegate to the appropriate entity responsibility for each of these four functions and ensure that each party's products perform the assigned functions adequately.

In an ideal world, TCI would opt for cable operator responsibility for functions 1, 2, and 3, and leave it to the consumer electronics industry to focus on the production of high-quality monitors and recorders. However, since EIA has historically refused to relinquish the tuning function to cable operators, TCI proposes a compromise solution in which cable operators perform functions 2 and 3 and manufacturers perform functions 1 and 4.

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[12](...continued)
Congress' continuing concern over signal theft is demonstrated by Section 17(A)(c)(1)(B) of the 1992 Act which recognizes "the need for cable operators to protect the integrity of signals . . . against theft or . . . unauthorized reception."

To make this compromise work, however, the Commission must require all new TVs and VCRs to have: 1) a standard EIA/ANSI 563 decoder interface port ("EIA/ANSI 563" or "multiport"); and 2) a modular tuner. The manufacture of new TVs or VCRs presents an opportunity to make significant progress towards compatibility. Multiport is a low cost method of obtaining a very high degree of compatibility over the long-term. Similarly, a modular tuner would allow the turning function in a TV or VCR to be upgraded as channel capacity is increased, thus removing the need for a converter and further promoting compatibility.

Multiport is a standard interface between TVs, VCRs, and cable descramblers that provides all addressing and security features now provided by set-top descramblers, but without the attendant compatibility problems. The Multiport interface has 20 pins and looks somewhat like the ports on the back of personal computers. The standard, developed and tested by the EIA/NCTA Joint Engineering Committee, was accepted by the American National Standards Institute ("ANSI") and is now formally known as "The EIA/ANSI 563 Decoder Interface Standard."[13] Thus, the multiport concept has been found workable and effective by the Electronics Industry Association and independent standard setting associations.

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[13] The nickname "Multiport" comes from the original intention of the Joint Engineering Committee to develop a standard that would have multiple applications in the consumer, cable, computer, and other related video fields.

Consumer electronics manufacturers would provide the standard EIA/ANSI 563 interface port in each manufactured TV or VCR. The cable operator would provide the set-back descrambler which would plug directly into the TV's or VCR's EIA/ANSI 563 port, much like a modem plugs into the serial port on a personal computer. A TV and VCR equipped with an EIA/ANSI 563 interface and the proper set-back descrambler would give a subscriber maximum flexibility in using consumer electronics hardware.

The principal advantage of multiport is that it allows the descrambler to be connected after the TV's or VCR's tuner and remote control circuitry. The video and audio signals enter and exit the TV or VCR first before entering/exiting the set-back descrambler. Because descrambling of cable signals is performed after the selected channel is tuned by the consumer's remote control, scrambling becomes transparent to the consumer electronics equipment. If the subscriber tunes to a non-scrambled signal, the descrambler is inactive. When a scrambled signal is tuned, the descrambler consults its authorization information and, if properly authorized, descrambles the picture. Consequently, home electronics equipment functions in the cable environment exactly as in an antenna environment so that the consumer regains all hardware functionality, including remote control usage, picture-in-picture, consecutive taping of programs on different channels, and watching one scrambled program while taping another scrambled program. It is as though the TV/VCR were connected to a video source without scrambling. EIA/ANSI

563, in effect, makes the TV/VCR "addressable" without the need for a set-top converter/descrambler or other hardware. Cable operators are accorded maximum flexibility to control security and subscriber access levels, and the use of scrambling does not frustrate TV and VCR features. The EIA/ANSI 563 interface port accomplishes these goals in a very cost efficient manner. The additional cost for the incorporation of the EIA/ANSI 563 port would be approximately $5 per television set or VCR.

In addition to restoring functionality to consumers' TVs and VCRs, EIA/ANSI 563 offers several other advantages. First, unlike set-top converters/descramblers, the set-back descrambler that would plug into the EIA/ANSI 563 port would avoid duplication of the TV's or VCR's tuner, remote control, and channel indicator. Nor would it require a "remodulator" to condition the signal so it is acceptable to the TV or VCR tuner. The absence of these items would significantly reduce the unit's cost and power consumption and decrease the amount of degradation the signal undergoes as it is unnecessarily processed and reprocessed in conventional set-top models.

Second, an optional enhancement to EIA/ANSI 563 allows the TV's or VCR's remote control to communicate with the descrambler. The descrambler, in turn, communicates with the tuner in the TV or VCR, thereby facilitating impulse pay-per-view ordering with the consumer's remote control. On-screen displays ("OSDs") for

assisting the subscriber in ordering PPV and electronic program guides are similarly expedited.[14]

Third, and perhaps most important, the EIA/ANSI multiport not only improves compatibility between home electronics equipment and cable distribution plant, but it promotes compatibility with other distribution technologies as well. Today, there are a number of video distribution technologies in addition to cable, including C-band satellites, DBS, MMDS, and SMATV. Telephone companies have announced plans to offer video services. One can reasonably expect additional video distribution systems to emerge. Like cable, the technology cycles of these systems will not be synchronized with the cycles of equipment manufacturers. Thus, compatibility problems are likely.

The very nature of multiport makes is an attractive solution in an environment in which there are multiple distribution technologies. Just as the cable operator can plug the appropriate set-back descrambler into the port, so to can any other distributor.

Multiport offers the Commission a unique opportunity to satisfy Section 17 of the Act and, at the same time, address a range of current and future compatibility issues. It is a forward-looking approach which will save both consumers and the

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[14] It is also possible to connect multiple devices to an EIA/ANSI 563-equipped TV or VCR so that, for example, a decoder providing captioning for the hearing impaired and a cable descrambler can both be used.